WATER RESOURCES RESEARCH GRANT PROPOSAL

Project ID: 2005ME40B

Title: Do Natural Chloride Gradients Affect the Formation of Disinfection?

Project Type: Research

Focus Categories: Water Quality, Toxic Substances, Geochemical Processes

Keywords: Disinfection By-Products, Chloride Gradient, Drinking Water

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Abstract

Disinfection by-products (DBP) are chlorinated or brominated compounds representing the reaction of the halogens with natural organic matter (NOM) in the water. These compounds in drinking water are themselves a health concern. We have preliminary evidence that the formation of DBPs is associated with environmental gradients, such as chloride, in source waters. The hypothesis is that natural chloride (and other marine halides) predisposes NOM in the source water to become a particular type of DBP in the finished water. We propose to test this hypothesis by analyzing the chemical associations between NOM, halides (Cl and Br), and DBP along a 350 km long gradient from coastal to interior drinking water supplies. Our hypothesis, if supported, would affect the management of water supplies, and potentially alter how source water is processed. The understanding and control of DBPs is the single biggest compliance challenge facing small to medium-sized water utilities in the near future (USEPA, 2001).